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Remarks

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This amendment is responsive to the office action dated Mar 29, 2006.

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With regard to the drawing objections, applicant has provided formal drawings for figures 1, 2, 3, 4, 5, 6A, 6B, and 6C. With regard to the drawing figure 4 TVOA 420, applicant refers examiner to figure 5 which shows the construction details of the TVOA. With regard to figure 5 shutter 423, applicant has labeled figure 5 423 as shutter and 422 as wires, in accordance with the specification describing them.

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With regard to the objection of claim 1 this claim has been rewritten to more clearly describe the relationship between the movable shutter, optical fibers, and reflecting lens. Applicant also notes that the amended claim 1 recites the shutter as part of the VOA, and further recites that the shutter is movable, while the reflector is stationary.

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With regard to the 35 USC 103(a) rejection of claim 1 over Cao 2002/0031324 and Gage 2003/0081901, applicant has amended claim 1 and notes that the device of Cao comprises input and output fibers 402/406, a non-reflective lens 404,

1 and a movable reflector 314. The applicant's device as
2 claimed comprises input and output fibers 101/102, a
3 movable shutter 423, and a lens including a stationary
4 reflector 427. The addition of a reflective surface to the
5 lens 404 of Cao or the use of a non-reflective lens 424 in
6 the claimed applicant's invention would result in either
7 device failing to operate, therefore the structures are
8 distinct, non-interchangeable, and perform different
9 functions. Additionally, the applicant's reflector 427 is
10 stationary, not movable 314 as in Cao. Therefore, Cao and
11 amended claim 1 are distinct. Additionally, the order of
12 structures in Cao (fiber 402/406 - lens 404 - movable
13 reflector 302) is different from the order of structures in
14 the amended claim 1 (fiber 101/102 - movable shutter 423 -
15 lens 424 with detector-side reflector). The device of Gage
16 teaches two separate lens structures: non-reflective first
17 lens 302 and front-surface reflective filter 316.
18 Applicant's invention has no first lens, and applicant's
19 reflective lens is not a filter, and has a coating applied
20 to the detector flat surface. The filter 316 of Gage is
21 used to select a particular wavelength of observation
22 (paragraph 55), and therefore the reflective material must
23 be placed on the front rather than the rear in Gage.

1 Additionally, Gage does not teach variable attenuation
2 using any movable elements. Since Cao does not teach a
3 movable shutter and contains different structures (movable
4 reflector vs movable shutter) in a different order (fiber-
5 lens-movable reflector vs fiber-shutter-reflector)
6 performing different functions (movement of reflected light
7 from receiving fiber vs blocking of optical path), and Gage
8 also does not teach a movable shutter and contains
9 structures in a different order and performing a different
10 function, claim 1 is allowable.

11 With regard to the 35 USC 103(a) rejection of claim 2
12 over Cao 2002/0031324 and Gage 2003/0081901, applicant
13 notes that amended claim 1 is allowable over these
14 references, and claim 2 is a proper dependant claim.
15 Furthermore, claim 2, which is directed to "a variable
16 optical attenuator positioned to attenuate the input
17 optical beam" is not found in Cao, which comprises a
18 rotating concave reflector which does not attenuate the
19 input beam, but rather relies on coupling the reflected
20 beam away from the output fiber. Therefore, Cao does not
21 anticipate claim 2. Gage has not have an attenuating
22 structure at all. Therefore claim 2 is allowable.

1 With regard to the 35 USC 103(a) rejection of claims
2 6, 8, and 9 over Cao 2002/0031324 and Gage 2003/0081901,
3 applicant notes that amended claim 1 is allowable over
4 these references, and claim 6 is a proper dependant claim.
5 Therefore claims 6, 8, and 9 are allowable.

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7 With regard to the 35 USC 103(a) rejection of claim
8 13 over Gage 2003/0081901 in view of Cao 2002/0031324 and
9 Wantanabe 5,917,643, applicant notes the many structural
10 and functional differences between the cited art and the
11 amended claim 13. Applicant notes that claim 13 reads on
12 applicant's figure 5 and recites "...said capillary body to
13 collimate light from one fiber and to focus reflected light
14 by said end lens facet to another fiber...", whereas the
15 collimator 210 of Gage does not perform the function of
16 reflection - this is performed by mirror 218, a separate
17 structure separated from the collimator as required by Gage
18 to allow the input and output beams to converge to the
19 reflection surface 218 a focal length after refraction from
20 the end facet of collimator 210. Applicant's collimator
21 424 includes a GRIN lens and reflector which eliminates the
22 requirement for a separate reflector, as seen in
23 applicant's figure 5. The collimator of Gage therefore

1 performs a different function and has different structure
2 than the collimator of amended claim 13. With regard to
3 Wantanabe, applicant notes that this device is a 90 degree
4 optical polarization rotator, which utilizes a magnetic
5 field to produce the well known "Faraday Effect" which
6 changes the polarization of optical energy, thereby
7 isolating reflected optical energy from a laser source that
8 is sensitive to it. Applicant notes that the structure and
9 function of the magnetic field of claim 13 is recited as "a
10 conductive wire movably fixed to said capillary body to
11 have a wire portion across said end facet of said capillary
12 body, said wire movable along said end facet when an
13 electric current is supplied to said wire to interact with
14 said magnetic field". No such movable wire portion is
15 present in Cao, Gage, or Wantanabe, and the movable wire
16 structure and path attenuation function is central to
17 amended claim 13. Applicant further notes that the amended
18 claim 13 recites a stationary lens including a reflector,
19 whereas the reflector of Cao is rotated, thereby reciting
20 different structure and function. Lastly, applicant notes
21 that amended claim 13 includes "a shutter engaged to said
22 wire portion and movable along with said wire to intercept
23 a beam that is either output or said input fiber or

1 received by said output fiber to attenuate the beam",
2 whereas the rotating reflector of Cao has extents much
3 larger than the optical shutter, and therefore intercepts a
4 beam equally from said input or said output fibers.
5 Therefore applicant's amended claim 13 is clearly distinct
6 from the prior art of Cao, Gage, and Wantanabe, or any
7 combination thereof.

8 With regard to the 35 USC 103(a) rejection of claims
9 16-21, and 23 over Gage 2003/0081901 in view of over Cao
10 2002/0031324 and Wantanabe 5,917,643, applicant notes that
11 claim 16 is a dependant claim related to the shutter
12 attached to a movable wire in a magnetic field, structure
13 and function which is not present in Cao. With regard to
14 claims 17-20, these are proper dependant claims which rely
15 on allowable claim 13, as amended.

16 With regard to the 35 USC 103(a) rejection of claim 21
17 over Gage, Cao and Wantanabe, the GRIN lens 302 of Gage
18 does not include a reflective surface 316a, as a focal
19 length spacing is required between lens 302 and reflective
20 surface 316. Neither Cao nor Wantanabe teach a GRIN lens
21 collimator, and since amended claim 13 is allowable, claim
22 21 is allowable.

1 With regard to the 35 USC 103(a) rejection of claim 23
2 over Gage, Cao and Wantanabe, applicant notes that the
3 Wantanabe contains no reflective flat end lens facet (since
4 its objective is to minimize the effect of reflected
5 light), and the reflector of Cao is movable to vary
6 attenuation, rather than stationary with a movable shutter
7 in the present application. The device of Gage also does
8 not teach a shutter, or any means for attenuation, and the
9 collimator 210 does not have a reflective end facet, and
10 reflective filter 218 is not a lens. As amended claim 13
11 is allowable, and dependent claim 23 is proper, claim 23 is
12 allowable.

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14 With this amendment, the present application is in
15 condition for allowance.

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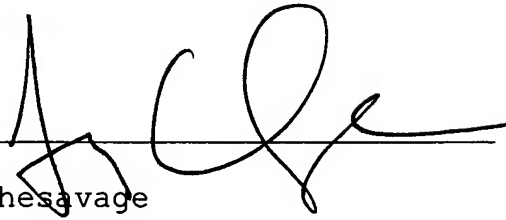
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Respectfully Submitted,



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